



SEQUENCE LISTING

<110> Lim, Moon Young
Edwards, Cynthia A.
Fry, Kirk E.
Bruice, Thomas W.
Starr, Douglas B.
Laurance, Megan E.
Kwok, Yan

<120> DNA Binding Compound-Mediated Molecular
Switch System

<130> 4600-0130.30

<140> US 09/518,297

<141> 2000-03-03

<150> US 60/122,513

<151> 1999-03-03

<150> US 60/154,605

<151> 1999-09-17

<160> 77

<170> FastSEQ for Windows Version 4.0

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<212> DNA

<213> Artificial Sequence

<220>

<223> DNA response element

<400> 1

cgttcgact t

11

<210> 2

<211> 17

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<223> DNA response element

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cggagtactg tcctccg

17

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<221> misc_feature
 <222> (1)...(12)
 <223> n = A,T,C or G

<400> 3
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12

<210> 4
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 <212> PRT
 <213> Homo sapiens

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 <222> (0)...(0)
 <223> transcriptional regulatory protein

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 Met Asp Glu Leu Phe Pro Leu Ile Phe Pro Ala Glu Pro Ala Gln Ala
 1 5 10 15
 Ser Gly Pro Tyr Val Glu Ile Ile Glu Gln Pro Lys Gln Arg Gly Met
 20 25 30
 Arg Phe Arg Tyr Lys Cys Glu Gly Arg Ser Ala Gly Ser Ile Pro Gly
 35 40 45
 Glu Arg Ser Thr Asp Thr Thr Lys Thr His Pro Thr Ile Lys Ile Asn
 50 55 60
 Gly Tyr Thr Gly Pro Gly Thr Val Arg Ile Ser Leu Val Thr Lys Asp
 65 70 75 80
 Pro Pro His Arg Pro His Pro His Glu Leu Val Gly Lys Asp Cys Arg
 85 90 95
 Asp Gly Phe Tyr Glu Ala Glu Leu Cys Pro Asp Arg Cys Ile His Ser
 100 105 110
 Phe Gln Asn Leu Gly Ile Gln Cys Val Lys Lys Arg Asp Leu Glu Gln
 115 120 125
 Ala Ile Ser Gln Arg Ile Gln Thr Asn Asn Asn Pro Phe Gln Val Pro
 130 135 140
 Ile Glu Glu Gln Arg Gly Asp Tyr Asp Leu Asn Ala Val Arg Leu Cys
 145 150 155 160
 Phe Gln Val Thr Val Arg Asp Pro Ser Gly Arg Pro Leu Arg Leu Pro
 165 170 175
 Pro Val Leu Pro His Pro Ile Phe Asp Asn Arg Ala Pro Asn Thr Ala
 180 185 190
 Glu Leu Lys Ile Cys Arg Val Asn Arg Asn Ser Gly Ser Cys Leu Gly
 195 200 205
 Gly Asp Glu Ile Phe Leu Leu Cys Asp Lys Val Gln Lys Glu Asp Ile
 210 215 220
 Glu Val Tyr Phe Thr Gly Pro Gly Trp Glu Ala Arg Gly Ser Phe Ser
 225 230 235 240
 Gln Ala Asp Val His Arg Gln Val Ala Ile Val Phe Arg Thr Pro Pro
 245 250 255
 Tyr Ala Asp Pro Ser Leu Gln Ala Pro Val Arg Val Ser Met Gln Leu
 260 265 270
 Arg Arg Pro Ser Asp Arg Glu Leu Ser Glu Pro Met Glu Phe Gln Tyr
 275 280 285

Leu Pro Asp Thr Asp Asp Arg His Arg Ile Glu Glu Lys Arg Lys Arg
 290 295 300
 Thr Tyr Glu Thr Phe Lys Ser Ile Met Lys Lys Ser Pro Phe Ser Gly
 305 310 315 320
 Pro Thr Asp Pro Arg Pro Pro Arg Arg Ile Ala Val Pro Ser Arg
 325 330 335
 Ser Ser Ala Ser Val Pro Lys Pro Ala Pro Gln Pro Tyr Pro Phe Thr
 340 345 350
 Ser Ser Leu Ser Thr Ile Asn Tyr Asp Glu Phe Pro Thr Met Val Phe
 355 360 365
 Pro Ser Gly Gln Ile Ser Gln Ala Ser Ala Leu Ala Pro Ala Pro Pro
 370 375 380
 Gln Val Leu Pro Gln Ala Pro Ala Pro Ala Pro Ala Pro Ala Met Val
 385 390 395 400
 Ser Ala Leu Ala Gln Ala Pro Ala Pro Val Pro Val Leu Ala Pro Gly
 405 410 415
 Pro Pro Gln Ala Val Ala Pro Pro Ala Pro Lys Pro Thr Gln Ala Gly
 420 425 430
 Glu Gly Thr Leu Ser Glu Ala Leu Leu Gln Leu Gln Phe Asp Asp Glu
 435 440 445
 Asp Leu Gly Ala Leu Leu Gly Asn Ser Thr Asp Pro Ala Val Phe Thr
 450 455 460
 Asp Leu Ala Ser Val Asp Asn Ser Glu Phe Gln Gln Leu Leu Asn Gln
 465 470 475 480
 Gly Ile Pro Val Ala Pro His Thr Thr Glu Pro Met Leu Met Glu Tyr
 485 490 495
 Pro Glu Ala Ile Thr Arg Leu Val Thr Gly Ala Gln Arg Pro Pro Asp
 500 505 510
 Pro Ala Pro Ala Pro Leu Gly Ala Pro Gly Leu Pro Asn Gly Leu Leu
 515 520 525
 Ser Gly Asp Glu Asp Phe Ser Ser Ile Ala Asp Met Asp Phe Ser Ala
 530 535 540
 Leu Leu Ser Gln Ile Ser Ser
 545 550

<210> 5
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> DNA response element

<400> 5
 tccctatcag tgatagaga

19

<210> 6
 <211> 22
 <212> DNA
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<220>
 <223> response element

<400> 6
 cttaacactc gcgagtgtta ag

22

<210> 7
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 <222> (3)...(3)
 <223> n = G or T

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 <222> (7)...(7)
 <223> n = A,T,C or G

<221> misc_feature
 <222> (12)...(12)
 <223> n = A or C

<400> 7
 rgntcantga cny

13

<210> 8
 <211> 77
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> activator sequence

<400> 8
 Ala Pro Pro Thr Asp Val Ser Leu Gly Asp Glu Leu His Leu Asp Gly
 1 5 10 15
 Glu Asp Val Ala Met Ala His Ala Asp Ala Leu Asp Asp Phe Asp Leu
 20 25 30
 Asp Met Leu Gly Asp Gly Asp Ser Pro Gly Pro Gly Phe Thr Pro His
 35 40 45
 Asp Ser Ala Pro Tyr Gly Ala Leu Asp Met Ala Asp Phe Glu Phe Glu
 50 55 60
 Gln Met Phe Thr Asp Ala Leu Gly Ile Asp Glu Tyr Gly
 65 70 75

<210> 9
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> activator sequence

<221> VARIANT
 <222> (1)...(11)
 <223> tetramer

<400> 9
 Asp Ala Leu Asp Asp Phe Asp Leu Asp Met Leu

1 5 10

<210> 10
 <211> 97
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> repressor sequence

<400> 10
 Met Asp Ala Lys Ser Leu Thr Ala Trp Ser Arg Thr Leu Val Thr Phe
 1 5 10 15
 Lys Asp Val Phe Val Asp Phe Thr Arg Glu Glu Trp Lys Leu Leu Asp
 20 25 30
 Thr Ala Gln Gln Ile Val Tyr Arg Asn Val Met Leu Glu Asn Tyr Lys
 35 40 45
 Asn Leu Val Ser Leu Gly Tyr Gln Leu Thr Lys Pro Asp Val Ile Leu
 50 55 60
 Arg Leu Glu Lys Gly Glu Glu Pro Trp Leu Val Glu Arg Glu Ile His
 65 70 75 80
 Gln Glu Thr His Pro Asp Ser Glu Thr Ala Phe Glu Ile Lys Ser Ser
 85 90 95
 Val

<210> 11
 <211> 36
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> repressor sequence

<400> 11
 Met Ala Ala Ala Val Arg Met Asn Ile Gln Met Leu Leu Glu Ala Ala
 1 5 10 15
 Asp Tyr Leu Glu Arg Arg Glu Arg Glu Ala Glu His Gly Tyr Ala Ser
 20 25 30
 Met Leu Pro Tyr
 35

<210> 12
 <211> 116
 <212> DNA
 <213> Escherichia coli

<220>
 <221> misc_feature
 <222> (0)...(0)
 <223> partial promoter sequence

<400> 12
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 gccaccactg acacggaaca acggcaaaca cgccgccggg tcagcggggt tctcct 116

<210> 13

<211> 22
 <212> DNA
 <213> Escherichia coli

 <220>
 <221> misc_feature
 <222> (0)...(0)
 <223> partial promoter sequence

 <400> 13
 agaaaattat tttaaatttc ct 22

 <210> 14
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> modified promoter sequence

 <400> 14
 gactgcagtg gtacctagga gg 22

 <210> 15
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> modified promoter sequence

 <400> 15
 agaaaattat tttaaatttc ct 22

 <210> 16
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> modified promoter sequence

 <400> 16
 ggaaaatttt ttttcaaaag ta 22

 <210> 17
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> modified promoter sequence

 <400> 17
 tgaaatttat tttgcgaaag gg 22

 <210> 18

<211> 11
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> engineered DNA response element

 <400> 18
 tgttcgact t 11

 <210> 19
 <211> 52
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> engineered DNA response element

 <400> 19
 catggacgcc actgagccgt ttttgttcgc acttgaggcg agtcgatgca cc 52

 <210> 20
 <211> 54
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> engineered DNA response element

 <400> 20
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 <210> 21
 <211> 58
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> engineered DNA response element

 <400> 21
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 <210> 22
 <211> 12
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> engineered DNA response element

 <400> 22
 cttaaaaata ac 12

 <210> 23
 <211> 16
 <212> DNA

<213> Artificial Sequence
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 <223> engineered DNA response element
 <400> 23
 ttgaaaaatc aacgct 16
 <210> 24
 <211> 21
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 <400> 24
 tttttgttcg cacttttttt t 21
 <210> 25
 <211> 20
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 <223> engineered DNA response element
 <400> 25
 tttttgggat tttccttttt 20
 <210> 26
 <211> 28
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 <400> 26
 aaaaaattgt gagcgctcac aatttttt 28
 <210> 27
 <211> 6
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> tissue-specific transcription factor
 <400> 27
 acttta 6
 <210> 28
 <211> 9
 <212> DNA
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<220>
 <223> engineered DNA response element

 <400> 28
 taccgacat 9

 <210> 29
 <211> 10
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> engineered DNA response element

 <400> 29
 gggactttcc 10

 <210> 30
 <211> 10
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> engineered DNA response element

 <400> 30
 gggattttcc 10

 <210> 31
 <211> 50
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> engineered DNA response element

 <400> 31
 cgaccgtgct cgagttaacg ggactttcca aaaacgatcg gactggactc 50

 <210> 32
 <211> 50
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> engineered DNA response element

 <400> 32
 cgaccgtgct cgagttaacg ggattttcca aaaacgatcg gactggactc 50

 <210> 33
 <211> 50
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> engineered DNA response element

<400> 33
 cgaccgtgct cgagaaattg ggattttcca aaaacgatcg gactggactc 50

<210> 34
 <211> 28
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> engineered DNA response element

<400> 34
 aaaaaattgt gagcgctcac aatttttt 28

<210> 35
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> engineered DNA response element

<400> 35
 ttttttttgt gagcggataa caaaa 25

<210> 36
 <211> 10
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> engineered DNA response element

<400> 36
 tctgggatcc 10

<210> 37
 <211> 14
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> engineered DNA response element

<400> 37
 gagttttttt taag 14

<210> 38
 <211> 14
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> engineered DNA response element

<400> 38

gagttttaaa agag

14

<210> 39

<211> 969

<212> PRT

<213> Homo sapiens

<220>

<221> VARIANT

<222> (0)...(0)

<223> transcriptional regulatory protein

<400> 39

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			20					25					30		
Pro	Gln	Met	Ala	Leu	Pro	Thr	Ala	Asp	Gly	Pro	Tyr	Leu	Gln	Ile	Leu
		35					40					45			
Glu	Gln	Pro	Lys	Gln	Arg	Gly	Phe	Arg	Phe	Arg	Tyr	Val	Cys	Glu	Gly
	50					55					60				
Pro	Ser	His	Gly	Gly	Leu	Pro	Gly	Ala	Ser	Ser	Glu	Lys	Asn	Lys	Lys
65					70				75					80	
Ser	Tyr	Pro	Gln	Val	Lys	Ile	Cys	Asn	Tyr	Val	Gly	Pro	Ala	Lys	Val
			85					90						95	
Ile	Val	Gln	Leu	Val	Thr	Asn	Gly	Lys	Asn	Ile	His	Leu	His	Ala	His
			100					105					110		
Ser	Leu	Val	Gly	Lys	His	Cys	Glu	Asp	Gly	Ile	Cys	Thr	Val	Thr	Ala
	115						120					125			
Gly	Pro	Lys	Asp	Met	Val	Val	Gly	Phe	Ala	Asn	Leu	Gly	Ile	Leu	His
	130				135						140				
Val	Thr	Lys	Lys	Lys	Val	Phe	Glu	Thr	Leu	Glu	Ala	Arg	Met	Thr	Glu
145					150					155					160
Ala	Cys	Ile	Arg	Gly	Tyr	Asn	Pro	Gly	Leu	Leu	Val	His	Pro	Asp	Leu
			165					170						175	
Ala	Tyr	Leu	Gln	Ala	Glu	Gly	Gly	Gly	Asp	Arg	Gln	Leu	Gly	Asp	Arg
		180					185						190		
Glu	Lys	Glu	Leu	Ile	Arg	Gln	Ala	Ala	Leu	Gln	Gln	Thr	Lys	Glu	Met
	195					200						205			
Asp	Leu	Ser	Val	Val	Arg	Leu	Met	Phe	Thr	Ala	Phe	Leu	Pro	Asp	Ser
	210					215					220				
Thr	Gly	Ser	Phe	Thr	Arg	Arg	Leu	Glu	Pro	Val	Val	Ser	Asp	Ala	Ile
225					230					235					240
Tyr	Asp	Ser	Lys	Ala	Pro	Asn	Ala	Ser	Asn	Leu	Lys	Ile	Val	Arg	Met
			245					250						255	
Asp	Arg	Thr	Ala	Gly	Cys	Val	Thr	Gly	Gly	Glu	Glu	Ile	Tyr	Leu	Leu
		260					265						270		
Cys	Asp	Lys	Val	Gln	Lys	Asp	Asp	Ile	Gln	Ile	Arg	Phe	Tyr	Glu	Glu
	275					280						285			
Glu	Glu	Asn	Gly	Gly	Val	Trp	Glu	Gly	Phe	Gly	Asp	Phe	Ser	Pro	Thr
	290				295						300				
Asp	Val	His	Arg	Gln	Phe	Ala	Ile	Val	Phe	Lys	Thr	Pro	Lys	Tyr	Lys
305				310						315					320
Asp	Ile	Asn	Ile	Thr	Lys	Pro	Ala	Ser	Val	Phe	Val	Gln	Leu	Arg	Arg
			325					330						335	
Lys	Ser	Asp	Leu	Glu	Thr	Ser	Glu	Pro	Lys	Pro	Phe	Leu	Tyr	Tyr	Pro
			340				345						350		

				805					810				815			
Lys	Leu	Gln	Leu	Tyr	Lys	Leu	Leu	Glu	Ile	Pro	Asp	Pro	Asp	Lys	Asn	
			820					825					830			
Trp	Ala	Thr	Leu	Ala	Gln	Lys	Leu	Gly	Leu	Gly	Ile	Leu	Asn	Asn	Ala	
		835					840					845				
Phe	Arg	Leu	Ser	Pro	Ala	Pro	Ser	Lys	Thr	Leu	Met	Asp	Asn	Tyr	Glu	
	850					855					860					
Val	Ser	Gly	Gly	Thr	Val	Arg	Glu	Leu	Val	Glu	Ala	Leu	Arg	Gln	Met	
865					870					875					880	
Gly	Tyr	Thr	Glu	Ala	Ile	Glu	Val	Ile	Gln	Ala	Ala	Ser	Ser	Pro	Val	
			885					890						895		
Lys	Thr	Thr	Ser	Gln	Ala	His	Ser	Leu	Pro	Leu	Ser	Pro	Ala	Ser	Thr	
			900					905					910			
Arg	Gln	Gln	Ile	Asp	Glu	Leu	Arg	Asp	Ser	Asp	Ser	Val	Cys	Asp	Thr	
	915						920					925				
Gly	Val	Glu	Thr	Ser	Phe	Arg	Lys	Leu	Ser	Phe	Thr	Glu	Ser	Leu	Thr	
	930					935					940					
Ser	Gly	Ala	Ser	Leu	Leu	Thr	Leu	Asn	Lys	Met	Pro	His	Asp	Tyr	Gly	
945				950					955						960	
Gln	Glu	Gly	Pro	Leu	Glu	Gly	Lys	Ile								
				965												

<210> 40
 <211> 96
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> engineered regulatory sequence

<400> 40	
gctagcccccg ccccggttgac gcaaattgggc ggtaggcgtg tacgggtggga ggtttatata	60
agcagagctc gtttagtgaa ccgtcagatc agatct	96

<210> 41
 <211> 154
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> engineered regulatory sequence

<400> 41	
gctagcgccc aaattgggat tttccaaaaa gccgaaattg ggattttcca aaaaccgccc	60
atcgcccgcc ccgttgacgc aaatgggcgg taggcgtgta cgggtggagg tttatataag	120
cagagctcgt ttagtgaacc gtcagatcag atct	154

<210> 42
 <211> 212
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> engineered regulatory sequence

<400> 42	
acgcgtgccc aaattgggat tttccaaaaa gccgaaattg ggattttcca aaaaccgccc	60

tagcgcccaa attgggattt tccaaaaagc cgaaattggg attttcctaaa aaccgccgat	120
cgcccgcccc gttgacgcaa atggggcggtg ggcgtgtacg gtgggaggtt tatataagca	180
gagctcgttt agtgaaccgt cagatcagat ct	212

<210> 43
 <211> 96
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> engineered regulatory sequence

<400> 43	
gctagcccccg ccccggtgac gcaaattgggc ggtaggcgtg tacgggtggga ggtctatata	60
agcagagctc gtttagtgaa ccgtcagatc agatct	96

<210> 44
 <211> 154
 <212> DNA
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<220>
 <223> engineered regulatory sequence

<400> 44	
gctagcgccc aggtcgggat tttccgagga gccgaggtcg ggattttccg aggaccgccg	60
atcgcccgcc ccgttgacgc aaatgggcgg taggcgtgta ccgtgggagg cctatataag	120
cagagctcgt ttagtgaacc gtcagatcag atct	154

<210> 45
 <211> 154
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> engineered regulatory sequence

<400> 45	
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atcgcccgcc ccgttgacgc aaatgggcgg taggcgtgta ccgtgggagg cctatataag	120
cagagctcgt ttagtgaacc gtcagatcag atct	154

<210> 46
 <211> 762
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> engineered promoter construct

<400> 46	
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tggctattgg ccattgcata cgttgtatct atatcataat atgtacattt atattggctc	120
atgtccaata tgaccgccat gttggcattg attattgact agttattaat agtaatcaat	180
tacgggggtca ttagttcata gcccatatat ggagttccgc gttacataac ttacggtaaa	240
tggccgcct ggctgaccgc ccaacgaccc ccgcccattg acgtcaataa tgacgtatgt	300
tcccatagta acgcaaatag ggattttcca ttaacgtcaa tgggtggagt atttacggta	360

aactgccac	ttggcagtac	atcaagtgt	tcatatgcc	agtccgccc	ctattgacgt	420
caatgacggt	aaatggccc	cctggcatta	tgcccagtac	atgactttat	gggattttcc	480
tatttggcag	tacatctacg	tattagtc	cgctattacc	atggtgatgc	ggttttggca	540
gtacaccaat	gggctggat	agcggtttga	ctcacgggga	tttccaagtc	tccaccccat	600
tgacgtcaat	gggagtttgt	tttggcacca	aggtaaaagg	gattttccaa	aatgtcgtaa	660
caactgcgat	cgcccgc	gttgacgcaa	atgggcggta	ggcgtgtacg	gtgggaggtt	720
tatataagca	gagctcgttt	agtgaaccgt	cagatcaagc	tt		762

<210> 47

<211> 762

<212> DNA

<213> Artificial Sequence

<220>

<223> engineered promoter construct

<400> 47

ggtacctcaa	tattggccat	tagccatatt	attcattggt	tatatagcat	aaattaatat	60
tggctattgg	ccattgcata	cgttgtatct	atatcataat	atgtacattt	atattggctc	120
atgtccaata	tgaccgcat	gttggcattg	attattgact	agttattaat	agtaatcaat	180
tacgggggtca	ttagttcata	gcccatatat	ggagttccgc	gttacataac	ttacggtaaa	240
tggcccgcct	ggctgaccgc	ccaacgaccc	ccgcccattg	acgtcaataa	tgacgtatgt	300
tcccatagta	acgcaaatat	tcccgggaaa	ttaacgtcaa	tgggtggagt	atttacggta	360
aactgccac	ttggcagtac	atcaagtgt	tcatatgcc	agtccgccc	ctattgacgt	420
caatgacggt	aaatggccc	cctggcatta	tgcccagtac	atgactttat	tctcgaggaa	480
tatttggcag	tacatctacg	tattagtc	cgctattacc	atggtgatgc	ggttttggca	540
gtacaccaat	gggctggat	agcggtttga	ctcacgggga	tttccaagtc	tccaccccat	600
tgacgtcaat	gggagtttgt	tttggcacca	aggtaaaatt	acgcgtaaaa	aatgtcgtaa	660
caactgcgat	cgcccgc	gttgacgcaa	atgggcggta	ggcgtgtacg	gtgggaggtt	720
gctagccgca	gagctcgttt	agtgaaccgt	cagatcaagc	tt		762

<210> 48

<211> 762

<212> DNA

<213> Artificial Sequence

<220>

<223> engineered promoter construct

<400> 48

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atgtccaata	tgaccgcat	gttggcattg	attattgact	agttattaat	agtaatcaat	180
tacgggggtca	ttagttcata	gcccatatat	ggagttccgc	gttacataac	ttacggtaaa	240
tggcccgcct	ggctgaccgc	ccaacgaccc	ccgcccattg	acgtcaataa	tgacgtatgt	300
tcccatagta	acgccaatag	ggactttcca	ttgacgtcaa	tgggtggagt	atttacggta	360
aactgccac	ttggcagtac	atcaagtgt	tcatatgcc	agtccgccc	ctattgacgt	420
caatgacggt	aaatggccc	cctggcatta	tgcccagtac	atgaccttac	gggactttcc	480
tacttggcag	tacatctacg	tattagtc	cgctattacc	atggtgatgc	ggttttggca	540
gtacaccaat	gggctggat	agcggtttga	ctcacgggga	tttccaagtc	tccaccccat	600
tgacgtcaat	gggagtttgt	tttggcacca	aaatcaacgg	gactttccaa	aatgtcgtaa	660
caactgcgat	cgcccgc	gttgacgcaa	atgggcggta	ggcgtgtacg	gtgggaggtc	720
tatataagca	gagctcgttt	agtgaaccgt	cagatcaagc	tt		762

<210> 49

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20           25           30
Leu Glu Met Leu Gly Asp Val Glu Ser Pro Ser Pro Gly Met Thr His
35           40           45
Asp Pro Val Ser Tyr Gly Ala Leu Asp Val Asp Asp Phe Glu Phe Glu
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Gln Met Phe Thr Asp Ala Leu Gly Ile Asp Asp Phe Gly
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Met Ala Asp Ala Leu Asp Asp Phe Asp Leu Glu Met
35           40

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<400> 76
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7

<210> 77
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<220>
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<400> 77
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9